

WHAT IS CLAIMED IS:

1. A back side incident type image pickup
sensor having on the front side of a semiconductor
substrate a photoelectric conversion portion and an
5 electric circuit, and having on the back side of the
semiconductor substrate an opening through which a
radiation beam is incident, the incident radiation
beam being detected by the photoelectric conversion
portion formed on the front side of the semiconductor
10 substrate, wherein the electric circuit is disposed
at a given distance in the horizontal direction from
the opening.

2. A back side incident type image pickup
15 sensor according to claim 1, wherein the
semiconductor substrate is a single crystal silicon
substrate.

3. A back side incident type image pickup
20 sensor according to claim 1, wherein the
semiconductor substrate is reduced in thickness after
a semiconductor integrated circuit that constitutes
the photoelectric conversion portion is formed.

25 4. A back side incident type image pickup
sensor according to claim 1, wherein the radiation
beam is infrared light.

5. A back side incident type image pickup sensor according to claim 4, wherein the infrared light has a wavelength in a range of 975 to 1150 nm.

5 6. A back side incident type image pickup sensor according to claim 1, wherein the radiation beam is an X-ray.

7. A back side incident type image pickup
10 sensor according to claim 1, wherein the photoelectric conversion portion is composed of a photodiode.

8. A back side incident type image pickup
15 sensor according to claim 1, wherein the electric circuit serves as one of a driver circuit for driving the photoelectric conversion portion and a signal processing circuit for processing a signal from the photoelectric conversion portion.

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9. A back side incident type image pickup sensor according to claim 1, wherein the given distance is 0.303 times the thickness of the semiconductor substrate or more.

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10. A back side incident type image pickup sensor according to claim 1, wherein the given

distance is 50 μm or more.

11. A back side incident type image pickup
sensor according to claim 1, wherein a dummy pixel is
5 formed in an offset portion between the electric
circuit on the front side of the semiconductor
substrate and the opening.

12. A back side incident type image pickup
10 sensor according to claim 1, wherein a diffusion
region for absorbing electric charges is formed in
the offset portion between the electric circuit on
the front side of the semiconductor substrate and the
opening.

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